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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
ROBINSON, LAUREN E				
ART UNIT		PAPER NUMBER		
1794				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

## Application No.

10/562,222

## Applicant(s)

SCHICHT ET AL.

## Examiner

LAUREN ROBINSON

## Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 7, 8, 10-14, 16-21, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 7, 8, 10-14, 16-21, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date 3/2006, 3/2009.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

Claims 11 and 24 are objected to because of the following informalities: The claims recite ZnSnSBO. The examiner notes that according to the applicants' disclosure, the "B" above should be lower cased. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are rejected due to it being unclear as to whether the composite is intended to include all of the combinations or whether only one combination is needed. Also, it is unclear whether each material on opposite sides of the backslash should occur in the claimed order and because it is unclear what subscripts r, s, t, x and u are as they are undefined.

It is unclear due to the applicants' disclosure including multiple embodiments wherein none of which include all the combinations and when one of the claimed combinations does occur, it does not have to be in the order as claimed.

For applying prior art, the examiner interprets the claim to mean that only one combination is needed and that the order does not have to be as claimed but merely that the material combination must be present.

***Claim Rejections - 35 USC § 102***

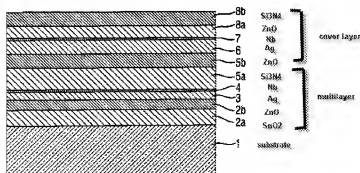
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7, 11-14, 16-21 and 23-24 rejected under 35 U.S.C. 102(b) as being anticipated by Boire et al. (US PN. 6,045,896).

**Regarding claims 1 and 21:** Boire et al. teach a composite product comprising a transparent substrate and a multilayer system comprising a functional layer that reflects solar radiation and therefore, the multilayer has a solar control function (abstract, Figures). The multilayer stack is also comprised of a Si<sub>3</sub>N<sub>4</sub> (Col. 5, lines 25-32) which corresponds to a layer C according to the applicants' disclosure and this layer is surmounted by a cover layer (all). The following structure is taught (Col. 9, lines 35-67 and Col 10, all).



The reference teaches that the ZnO layer is a layer that aids in protecting the functional layer (Col. 7, lines 20-40). Therefore, the cover layer is oxide based and provides mechanical protection. Boire et al. also teach that the ZnO layers can actually comprise a mixture of ZnO and TiO<sub>2</sub> (Col. 7, lines 20-30) **(Claim 1)**.

The examiner notes that for the layers to be present in the order taught within the reference, one would recognize that a process of applying said layers would be inherent **(Claim 21)**.

**Regarding claims 7 and 23:** Since it was discussed that the ZnO layer can be a mixture of ZnO and TiO<sub>2</sub>, one would know that the mixture will inherently produce a ZnTiO<sub>x</sub> compound when the materials are combined **(Claims 7 and 23)**.

**Regarding claims 11 and 24:** Also, Boire et al. teach that the above Nb layer within the cover layer as illustrated can be ZnO such as in layer 7 and that TiO<sub>2</sub> can replace ZnO such as in layer 8a (Col. 8, lines 7-25 and Col. 7, lines 19-30). Therefore, the reference teaches that the cover layer can comprise a superposition of oxide layers including a combination of ZnO/TiO<sub>2</sub> meeting applicants' claim **(Claims 11 and 24)**.

**Regarding claim 12:** The oxide layer surmounting, covering and protecting the multilayer coat can have a thickness of 0.5 to 20nm (Col. 7, lines 30-35) **(Claim 12)**.

**Regarding claim 13:** The reference teaches that the above layer C (Si<sub>3</sub>N<sub>4</sub>) can be a mixture of Si<sub>3</sub>N<sub>4</sub> and AlN (Col. 5, lines 25-31). Therefore, this Si<sub>3</sub>N<sub>4</sub> layer comprises another metallic element meeting applicants' claim 13 **(Claim 13)**.

**Regarding claim 14:** The Si<sub>3</sub>N<sub>4</sub> layer C layer can have a thickness of between 20 and 50nm (Col. 5, lines 38-41) **(Claim 14)**.

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**Regarding claim 16:** Also, the functional layer within the reference is the above Ag layer (Col. 3, lines 30-35) making the layer metallic based and meeting applicants' claim (Claim 16).

**Regarding claim 17:** The reference teaches that the barrier layers, which they teach are Si<sub>3</sub>N<sub>4</sub> layers (Col. 5, lines 26-35) such as the one in layer 8b above can be surmounted by an oxide layer such as ZnO and that ZnO can be the last layer in the stack (Col. 7, lines 20-40). Therefore, this teaching would produce a final layer of ZnO above the 8b layer above and thereby produce a final layer sequence of ZnO/Si<sub>3</sub>N<sub>4</sub>/ZnO (Claim 17).

**Regarding claim 18:** Also, the reference teaches that in a stack such as the one above, the SnO<sub>2</sub>/ZnO sequence can be replaced by a Si<sub>3</sub>N<sub>4</sub>/ZnO sequence (Col. 8, lines 9-12) and as discussed above, Nb layers can be ZnO. Therefore, using the structure above this would correspond to the composite comprising a Si<sub>3</sub>N<sub>4</sub>/ZnO/Ag/ZnO/Si<sub>3</sub>N<sub>4</sub>/cover layer sequence (Claim 18).

**Regarding claims 19-20:** The taught composite forms a glazing (Claim 20) assembly and maintains its properties after heat treatment (abstract) (Claim 19).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being obvious over Boire et al. (US PN. 6,045,896) in view of Anderson et al. (US Pub. No. 2001/0031365).

Boire et al. teach the applicants' invention of claim 1. However, they are silent regarding the mixed ZnTiOx layer being additionally doped or a ZrO2 having an additional metal and then being doped.

**Regarding claim 8:** Although Boire et al. are silent regarding the mixed ZnTiOx layer being doped with one of the metals claimed in claim 8, this limitation would have been obvious to one of ordinary skill in the art.

In particular, Anderson et al. teach a transparent substrate with a solar control multilayer stack applied thereon (title). They teach that metal oxide layers in such a stack such as ZnO can be doped with metal such as Al to provide the stack with antistatic properties which is well known in the art (0054).

Boire and Anderson disclose analogous inventions related to a transparent substrate with a multilayered composite stack comprising dielectric oxide layers thereon. From Anderson, it is the examiner's position that one of ordinary skill would recognize that if an antistatic function was desirable for the composite to be provided with an antistatic property, they could dope the layers with a metal according to Anderson. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Boire et al. to include that the dielectric layers including the ZnO layers of Boire including the ZnO/TiO2 mixed layer can be doped with metals such as Al in order to provide the stack with antistatic properties (**Claim 8**).

**Regarding claim 10:** While Boire et al. does not teach the cover oxide layer being a ZrO<sub>2</sub> that can include an additional layer and then further be doped according to claim 10, the examiner believes that these limitations would also be obvious.

For example, Anderson et al. illustrates that ZnO and ZrO<sub>2</sub> are functional equivalents (0036) and therefore, one would recognize that ZrO<sub>2</sub> can be used and treated in the same manner as ZnO within similar solar control composite stacks on a transparent substrate. As such, it is the examiner's position that one would recognize that ZrO<sub>2</sub> can be used in place of the ZnO layers and be treated in the same manner as both would have the same functional properties. Therefore, since Boire teaches that the ZnO layers can be mixtures with a TiO<sub>2</sub> and it was modified above that the layer can be doped, one would see that a ZrO<sub>2</sub> layer can be produced having a metal Ti therein and then be doped with Al to provide antistatic properties. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Boire et al. to include that a ZrO<sub>2</sub> layer can be mixed with Ti and be doped with Al to function as a dielectric layer according to the ZnO of Boire and provide antistatic to the stack (**Claim 10**).

#### ***Response to Arguments***

Applicant's arguments filed March 13, 2009 have been fully considered but they are not persuasive.

**Argument 1:** Applicants argue on page 7 of their remarks that their present amendments obviate the previous objections of claims 11 and 24. However, while the amendments do overcome the objection related to the improperly written ZnZrO



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compound, there is no amendment to the previously objected ZnSnSBO compound wherein the B therein should be lower case. As such, the objections of claims 11 and 24 still stand.

**Argument 2:** Applicants argue on pages 7 and 8, the rejections of claims 11 and 24 under 35 USC 112, second paragraph that the claims are definite. Specifically, that no definitions of the subscripts are required because the subscripts are merely to illustrate that a one-to-one ratio does not necessarily have to be present.

This argument is not persuasive because although it was merely applicants' intention to illustrate all possible values for subscripts and not necessarily a one-to-one ratio within the compounds, the examiner notes that the applicants' specification does not clearly define and limit the claimed subscripts. For this reason, it is unclear as to what the scopes of the claims are. For example, the applicants merely including generic subscript labels and not indicating in the specification and/or claims any clear indication of values to be used causes the claims to allow for unlimited amounts of possibilities and as such, applicants' are not clearly and distinctly claiming their invention.

Also, the examiner notes that the claims were additionally rejected for being unclear as the claims appear to indicate that all combinations must be present in the orders claimed which is not consistent with their disclosure. It is expected that applicants' were attempting to claim that at least one of the combinations were present but not necessarily all and used improper Markush language within the claims. For this reason, the examiner notes that the "and" prior to the last oxide combination should be changed to "or" and the claims will be examined as such. Also, as the applicants'

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disclosure illustrates that the placement of the claimed oxides on both sides of the backslash are not order specific but merely that they are next to each other, this is how the claims have been examined.

**Argument 3:** Applicants argue on page 9, first paragraph that Grimal does not disclose or suggest a product or process as claimed in claims 1 and 21. This is not persuasive because Grimal is not being used to reject the present claims in the office action.

**Argument 4:** Applicants argue on page 9, paragraph 2 that Boire does not disclose a specific example including a cover layer comprising a mixed oxide of titanium, zinc or zirconium and a further metal as recited in claims 1 and 21. This is not persuasive because although Boire does not include a specific example using such a mixed oxide, Boire clearly teaches that the cover layer can comprise a mixed oxide as claimed. For example, Boire teaches in column 7, lines 20-30 that at least one cover layer comprising ZnO, SnO<sub>2</sub>, TiO<sub>2</sub>, Nb<sub>2</sub>O<sub>5</sub>, Ta<sub>2</sub>O<sub>5</sub>, Al<sub>2</sub>O<sub>3</sub>, WO<sub>3</sub> and any mixture of at least two of these, which the examiner notes includes ZnO and TiO<sub>2</sub>, can be used. The examiner notes that such a listing still allows for a clear teaching of anticipation for a mixed oxide of ZnO and TiO<sub>2</sub> as the listing is small and limiting and does not provide for countless possibilities.

**Argument 5:** Applicants argue on page 9, paragraph 3 that Boire's listing mentioned above does not provide sufficient guidance so that one of ordinary skill in the art would select a cover layer with the particular combination of claims 1 and 21. Additionally, applicant asserts that Boire's indication that mixed oxides could possibly be used does

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not constitute disclosure or suggestion of the claimed mixed oxide and therefore, a prima facie case of obviousness has not been made.

The above argument is not persuasive. First, as discussed, the examiner notes that the listing is so small and limiting that Boire reciting that the cover layer can comprise a mixture of at least two of the listed compounds would lead one having ordinary skill to see a clear teaching that a mixture of ZnO and TiO<sub>2</sub> is taught. Therefore, one having ordinary skill would clearly have sufficient guidance as the combination is clearly taught.

Regarding the applicants' argument concerning that Boire's indication of mixed oxides possibly being used not constituting disclosure or suggesting of their mixed oxide is not persuasive. This is due to Boire's listing of materials being small and limiting and therefore, there would not be countless possibilities. Additionally, as ZnO and TiO<sub>2</sub> are two of the few compounds present, the combination of using both as a mixture is clearly taught when Boire recites a mixture of at least two. Also, although Boire teaches a mixed oxide as a possibility but does not include a specific example, the reference must be viewed as a whole and as a whole, a mixed oxide is still being taught. Therefore, again, the applicants' mixed oxide layer is anticipated by Boire.

Regarding applicants arguing that a prima facie case of obviousness has not been made is not persuasive because the examiner notes that the claims were rejected under 35 USC 102(b) and not under 35 USC 103(a), etc. For this reason, a prima facie case of obviousness was not used to reject the present claims as said claims were anticipated by Boire.

**Argument 6:** Applicants argue on pages 10 through 12 that Boire does not provide a prima facie case for claims 1 and 21 due to applicants' unexpected results.

The above argument is not persuasive because the examiner notes that as discussed, the claims were rejected under 35 USC 102(b). According to the MPEP, any evidence of secondary considerations, such as the argued unexpected results or commercial success, is irrelevant to 35 USC 102 rejections and thus cannot overcome a rejection so based. See *In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973) MPEP 2131.04. As such, the above argument is not persuasive.

Argument 7: Applicants argue on page 12 that Anderson does not teach the invention of claims 1 and 21 and therefore, the combination of Anderson with Boire fails to disclose or suggest every feature of the claims. Also, as claims 8 and 10 depend from claim 1, these would not have been obvious.

This is not persuasive because as discussed, Boire teaches the limitations of claims 1 and 21 and therefore, Anderson does not have to. Also, Anderson was used merely as a secondary reference for claims 8 and 10 and since claim 1 is rejected by Boire, the depending claims 8 and 10 are still rejected.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAUREN ROBINSON whose telephone number is (571)270-3474. The examiner can normally be reached on Monday to Thursday 6am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LAUREN ROBINSON/  
Examiner, Art Unit 1794

/Timothy M. Speer/  
Examiner, Art Unit 1794